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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/594,212	09/26/2006	Naruhisa Hirai	3273-0231PUS1	7227

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EXAMINER	
LAO, MARIALOUISA	
ART UNIT	**PAPER NUMBER**
1621	

NOTIFICATION DATE	DELIVERY MODE
07/19/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No.	Applicant(s)	
	10/594,212	HIRAI ET AL.	
	Examiner	Art Unit	
	M. Louisa Lao	1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-9 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-9 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date 9/26/06.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. **Claims 4-6 and 8-10 are objected to** under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only, and/or, cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). However, for purposes of advancing examination, claims 4-6 and 8-10 have been examined on the merits, with the assumption that these are dependent on the lowest numeral claim.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

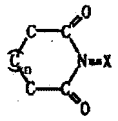
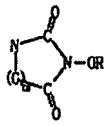
3. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

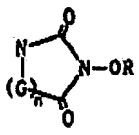
5. **Claims 1-9 are rejected** under 35 U.S.C. 103(a) as being unpatentable over Ishii et al. (EP1459804, EP`804) in view of Narihisa et al. (JP2003128618, JP`618).

Applicant Claims

1. The instant claims are drawn to a method for producing an aromatic carboxylic acid, by oxidizing an aromatic compound B with oxygen in the presence of a catalytic nitrogen-containing cyclic compound A. The catalysts have a skeleton represented by formula (i) and further, elucidated by Formula (I) and Formula (II), as shown  (I)  (II) .

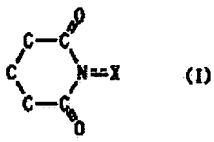
The presence of a metallic compound promoter (like Co or Mn compounds), the quantity of catalyst (less than A), time of reaction of 0.5- 4 hours, temperature of 150°C and higher and a continuous feed and extraction using a plurality of reactors with B of 3.0%w or less at the most downstream reactor are recited.

Determination of the Scope and Content of the Prior Art (MPEP §2141.01)

2. EP`804 teaches the processes of the production of organic compounds with catalysts comprising cyclic acylurea compounds with the formula (I) as shown:  (I) .

In page 39 Examples 20-21, EP`804 teaches the conversion of p-xylene into terephthalic acid, at catalyst levels of 3-5%by mole relative to p-xylene, in the presence of a cobalt (II) acetate and manganese (II) acetate at 100-150 deg for 12-14 hours.

3. JP`618 teaches a method for producing aromatic carboxylic acids by oxidizing an aromatic compound having an aromatic ring linked with an alkyl group or its lower oxidized group with oxygen at 120 degC or more in the presence of a catalyst constituting an imide-based compound having a substituted N-cyclic imide skeleton shown by formula (I) below,



(I)

where X = an Oxygen atom or a hydroxyl group.

In [0057]-[0064], JP`618 typifies the conversion of acids from their corresponding aromatic hydrocarbons as illustrated by terephthalic acid from p-xylene reacting with oxygen in the presence of the imide-based catalyst, the metal promoter cobaltous acetate and manganese acetate for 4 hours at 150degC.

Ascertainment of the Difference
Between Scope of the Prior Art and the Claims
(MPEP §2141.012)

4. Both EP`804 and JP`618 differ from the instant claims in their silence in the plurality of reactors used in the generation of the aromatic carboxylic acid and % concentration of Oxygen gas and the continuous reactant feed and product extraction or the level of the aromatic compound in most downstream reactor.

Finding of Prima Facie Obviousness Rational and Motivation
(MPEP §2142-2143)

5. At the time of the invention, one of ordinary skill in the art looking for a method of producing aromatic carboxylic acids from the reaction of the corresponding aromatic compound with oxygen in the presence of the acylurea or imide-containing catalyst with a Co/Mn metal compound promoters would have found it *prima facie* obvious to start with the teachings of the cited prior art references and couple said teachings with optimization steps and batch to

continuous steps, to make applicants' process using their methodology and parameters, thereto. The combination of the teachings of the cited prior art suggests that specific features of their invention may be combined with other features in accordance with the invention, and alternatively embodiments will be recognized by those skilled in the art and are intended to be included within the scope of the claims. Therefore, it would have been obvious to modify the combined cited prior art processes, such as by optimization of % weights, temperature, conversion from batch (lab bench situations) to continuous reactions (suitable for manufacturing scenes), since these are within the purview of artisan through routine experimentation, to develop a more economical oxidation process with a reasonable expectation of success.

6. The recitation of % weights, level of catalyst to reactant ratios, temperature, residence time, continuous mode of feed reactants to product extraction are optimization steps that are within the normal undertaking of one of ordinary skill in the art at the time of the invention and would not require any inordinate degree of experimentation.

7. Optimizing such processes is *prima facie* obvious because an ordinary artisan would be motivated to use known processes from the art to make the process more efficient or explore economical advantages over the other. Merely modifying the process conditions is not a patentable modification absent a showing of criticality. In re Aller, 220 F.2d 454, 105 U.S.P.Q. 233 (C.C.P.A. 1955).

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MLouisa Lao whose telephone number is 571-272-9930. The examiner can normally be reached on Mondays to Thursdays from 8:00am to 8:00pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yvonne Eyler can be reached on 571-272-0871. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

`mll07112007
MLouisa Lao
Examiner
Art Unit 1621

for YVONNE EYLER
SUPERVISORY PATENT EXAMINER
TC1600 GAU 1621